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ABSTRACT

This study used 1994 data from the California Community College System cohort of first-time freshmen to identify that part of University of California (UC) or California State University (CSU) transfer performance that is determined by factors outside the control of college administrators. The idea was to "level the playing field" when comparing transfer rates of various colleges by adjusting for factors beyond the control of colleges. Relevant uncontrollable factors included distance to the nearest CSU/UC campus, the number of students under the age of 25, the number of students receiving the Board of Governors Waiver, and the number of students with an uninformed transfer goal. The study identified colleges in the bottom quartile of the distribution of raw transfer rates as "low-transfer" colleges. A multiple regression model was developed using those predictors that had a meaningful contribution to prediction of raw transfer rates. Colleges were sorted in order of residuals (the amount by which raw transfer rate differed from predicted transfer rate). If a college remained in the bottom quartile of adjusted transfer rates, this college was considered a bonafide low-transfer college. The analysis placed 14 (rather than 26) colleges in the low-transfer category. (PGS)

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A STATISTICAL ANALYSIS TO DEFINE THE "LOW-TRANSFER" CALIFORNIA COMMUNITY COLLEGE

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Introduction

This report summarizes recent work that identified "low-transfer" colleges in the California Community College system. This report will not give a detailed explanation of the methodology that staff used to identify the "low-transfer" colleges.

The analysis performed by staff has the following caveat. The variables that the adjustment uses are explicit variables that (1) are beyond the control of college administrators and (2) have an assumed causal link to each college's transfer performance. The model in this report differs from models that researchers would use in program evaluation in that the goal is not to quantify all the variables that materially affect transfer performance. The goal is to show what each college's transfer performance would be if certain uncontrollable factors were equal for every college. This is the concept of "leveling the playing field" whereby colleges are not rated upon factors that they cannot control.

This distinction is important. Because we assume that factors within the control of college administrators should affect transfer performance, the model in this report, relying only upon uncontrollable factors, should account for only a portion of the variation in transfer performance. So this model intentionally explains only a portion of the variation in transfer performance.

Explaining a portion of transfer performance does not pose a problem for adjustment, because the model only estimates transfer rates if the chosen "predictors" were equal at each college. The modeling is not intended to help us infer that each uncontrollable factor has a particular level of "effect" upon transfer performance. Such an analysis would be appropriate for a program evaluation but it is unnecessary for the goal of statistical adjustment.

Method

This analysis followed a procedure that we summarize in a table labeled "Major Steps in the Statistical Analysis for Defining Low-Transfer Colleges." The procedure omits one uncontrollable factor, student ethnicity/race, from the model although this variable customarily correlates with transfer rates at colleges. The Consultation Council recommended against the use of ethnicity/race for this analysis because this application was believed to promote an attitude of lowered expectations for certain disadvantaged groups. Given this guidance, this analysis omits ethnicity/race from the adjustment model.

Major Steps in the Statistical Analysis for Defining Low-Transfer Colleges

1. Use Task Force discussion and prior research to specify variables that we should consider in formulating a performance measure of transfer output.

2. Query the Expanded Student-Right-to-Know student history data file to calculate a raw transfer rate for each college.

3. Preliminarily, classify as "low-transfer" those colleges in the bottom quartile of the distribution of raw transfer rates.

4. For adjustment purposes, query the Expanded Student-Right-to-Know student history data file to calculate the rates of other uncontrollable, systematic environmental factors for each college.

5. In addition to the student history file, find the distances, via an Internet map tool, between each community college and (a) the nearest CSU campus and (b) the nearest UC campus.

6. Find the correlation of the raw transfer rates for the colleges with each of the rates that we might use as adjustments because a correlation will probably indicate a systematic, environmental relationship between the raw transfer rate and the other rates.

7. Consider those rates that correlate with the raw transfer rate as "predictors" of the raw transfer rates, and test this assumption with a multiple regression model.

8. Keep in the final multiple regression model only those predictors that have a meaningful contribution to predicting the raw transfer rate.

9. Use the final multiple regression equation to produce residuals, that is, the amount by which raw transfer rate differs from predicted transfer rate (which is really an adjusted transfer rate for each college).

10. Sort the colleges in order of this residual and identify the bottom quartile for the distribution of the residuals.

11. If a member of the bottom quartile of the raw transfer rates still falls in the bottom quartile of the adjusted transfer rates, then consider this college as a bonafide low-transfer college. (The adjustments to "level the playing field" can only play a positive role in this process.)

The transfer data for the analysis come from the Expanded Student-Right-To-Know cohort of first-time freshmen in 1994. This data system tracked a group of 344,352 students for four years. The college-specific transfer counts only include transfers to the UC system or to the CSU system. The adjustment process implements a generic performance model. Figure 1 is a graphic representation of this approach. An analyst could conceivably employ this model to study any performance process, not just transfer rate.

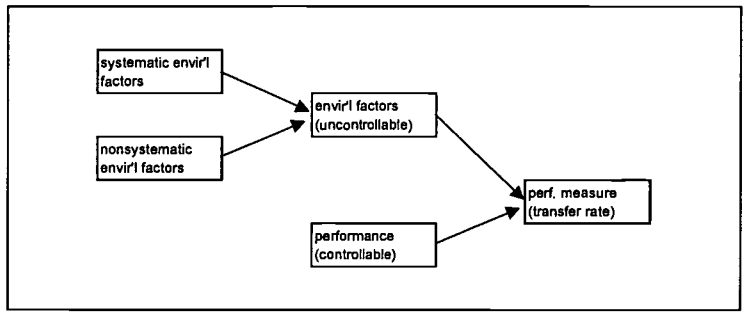

Figure 1: Basic Model of Transfer Rate Adjustment

For identifying low-transfer colleges, the model in Figure 1 distinguishes between the various factors that contribute to each college's transfer rate. This specific application of the general model appears in a graphic form, Figure 2. In Figure 2, we specify the four adjustment factors of (1) distance to the nearest CSU campus; (2) rate of student enrollment that is under 25 years of age; (3) the rate of BOGW students; and (4) the rate of students who reported an uninformed goal of transfer.

Figures 1 and 2 warrant attention because they clearly show the limitations of the adjustment model staff used in this analysis. The adjustment model only considers systematic environmental factors. The adjustment excludes nonsystematic factors that may be peculiar to a few colleges, such as earthquake damage, flooding and the like. It is foreseeable that a college may have suffered from a nonsystematic environmental factor,

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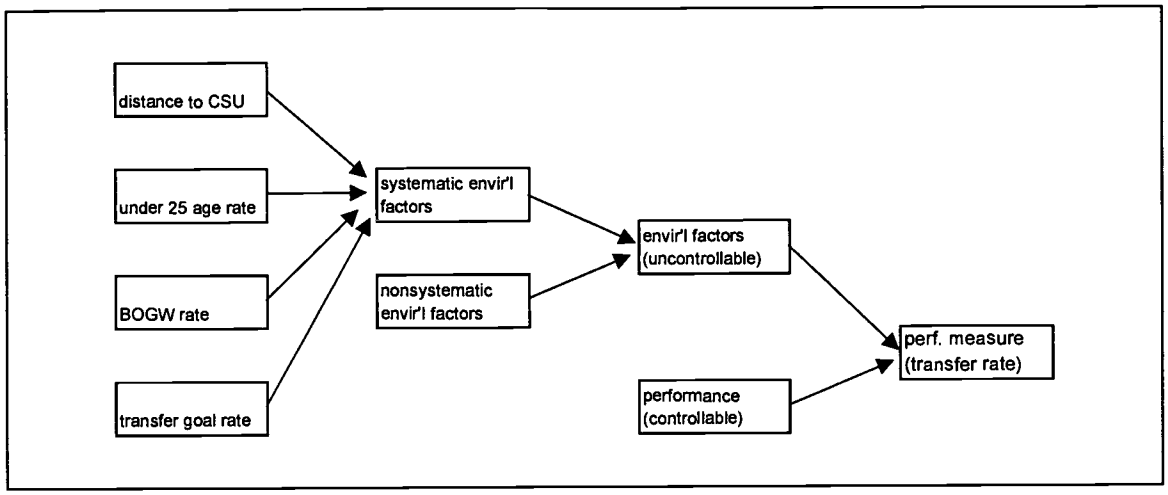

Figure 2: Elaborated Model of Transfer Rate Adjustment

and the degree to which such a factor should affect the adjustment of a transfer rate will probably merit a case-by-case consideration.

Figures 1 and 2 also explain why staff exclude from the adjustment model a factor such as operation of a transfer center. Operation of a transfer center is something that a college administrator can control. Adjustment for such a controllable factor would not serve the purpose of "leveling the playing field."

Note that work on a causal model, unlike the adjustment model in this report, would include controllable factors such as operation of a transfer center. In a causal model, staff would need to quantify the relationship between all material factors and the performance outcome. In a causal analysis, such as one for program evaluation, quantifying causal factors of an outcome is necessary to avoid the misleading inference of relationships between the variables that can stem from so-called "specification error."

Staff used a statistical program (SPSS, version 9.0) for the calculations required in the following steps.

1. Calculation of descriptive statistics to check the quality of the data.
2. Calculation of correlation coefficients to select reasonable adjustment variables.
3. Calculation of a multiple regression model that simultaneously adjusts each college's transfer rate for the selected, uncontrollable factors.

The statistical details of the multiple regression in the adjustment model appear below in Figure 3 (Summary of the Four-Variable Adjustment Model). These details are reported only to indicate the overall relevance that each adjustment factor has for transfer rates. Distance to the

nearest CSU campus appears as the weakest adjustment factor in this model. Uninformed transfer goal appears as the strongest adjustment factor here.

Figure 3: Summary of the Four-Variable Adjustment Model

R	0.643
R-square	0.414
Adjusted R-square:	0.390
Std. Error of the Estimate	27.426
F-value	17.645
F-value sig.	0.000
no.of cases	105

Parameter Estimates

	Unstd. Coeff.	Std.Beta	t-value	Sig.
Constant	2.164	not applic.	not applic.	not applic.
Miles to CSU	-0.145	-0.146	-1.67	0.098
Under age 25	0.084	0.244	2.135	0.035
BOG Waiver	-0.051	-0.158	-2.041	0.044
Uninformed Transfer Goal	0.110	0.347	3.298	0.001

Results

The analysis allows us to categorize fourteen colleges as low-transfer. With 106 colleges in the analysis, the bottom quartile of transfer rates is the set of colleges that rank between and including the 80th position to the 106th position. Because 106 divided by 4 equals 26.5, rounding gives us 27 colleges for the bottom quartile. Contra Costa becomes the cut-off point for the bottom quartile, based on raw transfer rates.

Because of missing data, only 105 colleges have adjusted transfer rates. Antelope Valley has no adjusted transfer rate because the data set lacks a count for the BOGW students. With rounding, the bottom quartile of adjusted rates has 26 colleges in it. Therefore, the rankings between and including the 81st position and the 106th position are the bottom quartile of adjusted transfer rates. This is important because our decision rule requires that a college is categorized as low-transfer if it meets the following two conditions:

1. Its raw transfer rate is in the bottom quartile of all raw transfer rates in the state.
2. Its adjusted transfer rate is in the bottom quartile of all adjusted transfer rates in the state.

When we apply the above two-part decision rule, we classify fourteen colleges as low-transfer. We list them below.

	Raw Rank	Adjusted Rank	College
1.	107	89	L.A. Trade-Tech
2.	103	82	Imperial Valley
3.	102	104	Barstow
4.	99	99	Monterey Peninsula
5.	98	95	L.A. Mission
6.	97	91	Lassen
7.	96	90	Marin
8.	95	96	San Diego City
9.	93	85	Rio Hondo
10.	92	87	Santa Ana
11.	87	103	Cerritos
12.	86	93	L.A. Harbor
13.	85	81	East L.A.
14.	82	100	Chaffey

Discussion

In this section, some technical issues are covered.

Antelope Valley College is an issue in this analysis because the two-part decision rule cannot apply to it. Because Antelope Valley has a missing data situation, the college has no adjusted transfer rate. If we omit this college from the low-transfer category, as we have in the table above, we may, in effect, set an undesirable precedent. That is, a college can benefit from failing to report data that support a process aimed at providing accountability. On the other hand, if we categorize Antelope Valley as low-transfer, we will, in effect, interpret the decision rule in a stringent manner. That is, the

categorization process assumes the negative perspective for a college when there is doubt.

The statistical model used here is rather sensitive. It is possible for the categorization of colleges near the cut-off level to change, given modification of the data for even one college. However, the use of adjustments only to eliminate a college from the low-transfer category reduces the harm from classification error.

Various parties have recommended additional analyses or approaches that can conceivably improve the effort to "level the playing field." These include a measurement of how close a college campus is to the state's borderline, among others. Future adjustment analyses may well benefit from pursuing alternatives or enhancements.

Conclusion

This report documents an analysis to identify low-transfer community colleges. Fourteen colleges fall into the category of low-transfer colleges. The use of a two-part decision rule provides an equitable process here by considering certain mitigating factors in transfer performance. As a result, thirteen colleges that have relatively low "raw" transfer rates leap out of the low-transfer category through the use of the adjustment process.

An examination of the fourteen low-transfer colleges indicates that the process of categorization does not have an apparent bias for or against a particular type of college. That is, large, inner-city colleges or small rural colleges seem to have a proportional representation in the low-transfer category.

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